Fairness in Algorithmic and Crowd-Generated Descriptions of People Images

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ABSTRACT

Image analysis algorithms have become indispensable in the modern information ecosystem. Beyond their early use in restricted domains (e.g., military, medical), they are now widely used in consumer applications and social media. With the rise of the “Algorithm Economy,”¹ image analysis algorithms are increasingly being commercialized as Cognitive Services. This practice is proving to be a boon to the development of applications where user modeling, personalization and adaptation are required. From e-stores, where image recognition is used to curate a “personal style” for a given shopper based on previously viewed items,² to dating apps, which can now act as “visual matchmakers,”³ the technology has gained increasing influence in our digital interactions and experiences.

However, proprietary image tagging services are black boxes and there are numerous social and ethical issues surrounding their use in contexts where people can be harmed. In this talk, I will discuss recent work in analyzing proprietary image tagging services (e.g., Clarifai, Google Vision, Amazon Rekognition) for their gender and racial biases when tagging images depicting people. I will present our techniques for discrimination discovery in this domain [2], as well as our work on understanding user perceptions of fairness [1]. Finally, I will explore the sources of such biases, by comparing human versus machine descriptions of the same people images [3].

CCS CONCEPTS

• **Computing methodologies** → **Computer vision tasks**; • **General and reference** → *Experimentation*.

KEYWORDS

Algorithmic bias, computer vision, fairness, image analysis

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¹<https://www.gartner.com/smarterwithgartner/the-algorithm-economy-will-start-a-huge-wave-of-innovation/>

²<https://vue.ai/solutions/omnichannel-personalization.html>

³<https://blog.clarifai.com/4-ways-ai-is-improving-dating-apps>

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BIOGRAPHY

Jahna Otterbacher (Ph.D., University of Michigan at Ann Arbor) is currently Assistant Professor at the Open University of Cyprus, Faculty of Pure and Applied Sciences, where she coordinates the Cyprus Center for Algorithmic Transparency (CyCAT). The CyCAT seeks to promote transparency and accountability in algorithmic systems that people routinely use, but that are rather opaque to them, through three types of interventions: data-, developer- and user-focused. Jahna holds a concurrent appointment as team leader of the Transparency in Algorithms Group at RISE (Research centre on Interactive media, Smart systems and Emerging technologies), a new center of excellence and innovation in Nicosia, Cyprus.

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